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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,639	07/24/2003	Hiroki Kaneko	520.42879X00	8077

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EXAMINER

BECK, ALEXANDER S

ART UNIT	PAPER NUMBER
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2629

NOTIFICATION DATE	DELIVERY MODE
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07/03/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/625,639

Applicant(s)

KANEKO ET AL.

Examiner

Alexander S. Beck

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-10, 12-14, 17-22 and 27-39 is/are pending in the application.
- 4a) Of the above claim(s) 30 and 32-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 12-14, 17-22, 27-29, 31, 38 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Acknowledgment is made of the amendment filed by the applicant on March 30, 2007 (hereinafter "Amendment"), in which: claims 1, 13, 19, 20, 22 and 27 are amended; new claims 28-39 are added; and the rejections of the claims are traversed. Claims 1-6, 8-10, 12-14, 17-22 and 27-39 are currently pending in U.S. Patent Application No. 10/625,639, of which claims 30 and 32-27 are withdrawn from consideration, and an Office action on the merits follows.

Election/Restrictions

2. Newly submitted claims 30 and 32-37 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the embodiments claimed are ones in which either the first electrode and second electrode are formed on the second substrate or wherein the second electrode is separate from the reflector, the reflector comprising a plurality of bumps.

Since applicant has received an action on the merits for the originally presented invention (i.e. first electrode on a first substrate, second electrode on a second substrate, the second electrode comprising a plurality of bumps), this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 30 and 32-37 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

3. Claim 1 is objected to because of the following informalities: It is the examiner's interpretation that the newly added limitation "on the second substrate" in line 5 is supposed to read, "or the second substrate". Appropriate correction is required.
4. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claims in proper dependent form, or rewrite the claims in independent form. As to claim 17, the limitation wherein the segments of the first electrode being on the same potential in one pixel was recited in parent claim 13.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 38 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,897,996 to Ikeda et al. (hereinafter "Ikeda").

As to claim 38, Ikeda discloses an electrophoretic display comprising a first and second substrate (1, 2) each being disposed with a predetermined gap between the first and second substrates; a layer comprising a transparent insulating solvent (4) and charged particles (5) dispersed in the insulating solvent, the layer being sandwiched between the substrates; a first

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electrode (7) disposed in the layer and between the first and second substrates for applying electric field to the layer; and a second electrode (6) supported by the second substrates for applying an electric field to the layer. (Ikeda at col. 4, ll. 8-34.) The second electrode is provided with a plurality of bumps for reflecting light, wherein the bumps are formed continuously and arranged randomly. (Ikeda at col. 9, ll. 7-17; col. 10, ll. 55-60.)

As to claim 39, Ikeda discloses wherein the first electrode is formed in such a manner as to position at the flat portion between the bumps. (Ikeda at Figure 1.)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 1-6, 8-10, 12-14, 17-22, 27-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda in view of U.S. Patent Publication No. 2002/0167480 by Johnson et al. (hereinafter "Johnson").

As to claims 1 and 13, all of the claim limitations have already been discussed and met by Ikeda as detailed in the above paragraphs with respect to claim 38, with the exception of: the first and second electrodes disposed in such a manner that the first and second electrodes are opposite to each other, wherein the first electrode has a network structure with a window in each pixel, wherein the first electrode is divided into a plurality of segments per pixel and the segments have the same voltage in the pixel, and wherein the bumps on the second electrode are formed in a string like form. Ikeda discloses wherein the bumps on the second electrode are formed in a string like form (e.g. wherein a matrix full of pixels, with a plurality of bumps per pixel, inherently comprises a plurality of bumps in a string like form across the length and width of a display), but does not disclose expressly the remaining limitations.

Johnson, analogous with Ikeda, discloses an electrophoretic display wherein a first electrode, which is divided into a plurality of segments per pixel (6,6'), is provided on a first substrate (12) and a second electrode (7) is provided on a second substrate (11) in such a manner that the first and second electrodes are opposite to each other. (Johnson at ¶¶ 0031-0035.) Moreover, Johnson discloses wherein the first electrode segments have the same voltage in the pixel. (Johnson at ¶ 0032.)

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the electrophoretic display of Ikeda such that the first electrode comprised two electrodes and was disposed on a substrate opposite to that of the second

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electrode, as taught/suggested by Johnson. Ikeda as modified by Johnson teaches/suggests the first electrode comprising two electrodes (6,6') isolated from one another on the same substrate, and the area between the two electrodes on the first substrate reads on a "window" in each pixel, the first electrode configuration above each pixel comprising a network structure. (Johnson at ¶¶ 0031-0035.) Moreover, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to drive each segmented first electrode at the same potential per pixel, as taught/suggested by Johnson. The suggestion/motivation for doing so would have been to realize intermediate optical states via electric voltages on the supplementary first electrode (6'). (Johnson at ¶ 0031.)

As to claim 3, Ikeda discloses wherein the second electrode is in cooperative relation with the reflector. (Ikeda at col. 4, ll. 8-34; col. 9, ll. 7-17.)

As to claim 10, Ikeda discloses wherein the charged particles have a low reflection ratio, its color being substantially black. (Ikeda at col. 5, ln. 54 – col. 6, ln. 51.)

As to claims 12 and 18, Ikeda discloses wherein active elements (10) are disposed on the second substrate (2) to display picture images by active matrix drive. (Ikeda at col. 7, ll. 25-27.)

As to claim 14, most of the claim limitations have already been discussed and met by Ikeda and Johnson as detailed in the above paragraphs with respect to claims 1,3 and 13, with the exception of: the bumps of the uneven surface are present in the windows of the network structure of the first electrode.

Ikeda discloses wherein the region of the protrusion is determined according to the portion where the electric strength needs to be intensified between first and second electrodes. (Ikeda at col. 4, ll. 8-34.) It is therefore inherent that the combined teachings of Ikeda and

Johnson, as previously combined in the rejection of claims 1 and 13 above, would result in the bumps (e.g. protrusions) of the uneven surface present in the windows of the network structure of the first electrode because the protrusions are located in regions in which there are no first electrodes disposed directly above (i.e. a window) so as to intensify the electric strength.

As to claim 17, all of the claim limitations have been discussed and met by Ikeda and Johnson, as detailed in the above paragraphs with respect to claims 1 and 13.

As to claim 19, Ikeda discloses wherein the uneven surface of the reflector comprises a plurality of bumps and concaves in a pixel. (Ikeda at col. 9, ll. 7-17.)

As to claims 2 and 20, Ikeda as modified by Johnson teaches/suggests wherein the first electrode comprises a plurality of segments and is disposed on the first substrate. (Johnson at ¶¶ 0031-0035.)

As to claim 4, Ikeda as modified by Johnson teaches/suggests wherein the first electrode is disposed above the uneven surface (e.g. roughened surface) of the second electrode. (Ikeda at col. 9, ll. 7-17.) (Johnson at ¶¶ 0031-0035.)

As to claim 6, Ikeda discloses wherein the uneven surface (i.e. the roughened uneven surface of the electrode or the light scattering layer formed on the electrode) is patterned at random (e.g. randomly covered with grooves, bumps, protrusions, rivets, etc). (Ikeda at col. 9, ll. 7-17.)

As to claims 8 and 22, Ikeda discloses wherein the uneven surface has a string structure of continuous bumps. (Ikeda at col. 4, ll. 8-34.) Moreover, a matrix display full of pixels, with a plurality of bumps per pixel, inherently comprises a plurality of bumps in a string like form across the length and width of a display.

As to claim 9, all of the claim limitations have already been discussed and met by Ikeda and Johnson, as detailed in the above paragraphs with respect to claim 17.

As to claim 27, Ikeda as modified by Johnson teaches/suggests wherein the first electrode is disposed in areas between the bumps in a pixel (e.g. disposed in a pixel between visible protrusions). (Ikeda at col. 9, ll. 7-17.) (Johnson at ¶¶ 0031-0035.)

As to claims 5 and 21, Ikeda as modified by Johnson teaches/suggests wherein the first electrode is disposed in areas corresponding to the flat portions (e.g. between protrusions) of the uneven surface of the second electrode. (Ikeda at col. 9, ll. 7-17.) (Johnson at ¶¶ 0031-0035.)

As to claims 28, 29 and 31, all of the claim limitations have already been discussed and met by Ikeda and Johnson, as detailed in the above paragraphs with respect to claims 1, 2, 13 and 21, wherein the second substrate (2) of Ikeda is provided with a plurality of bumps in each pixel for reflecting light in that an electrode (6) is disposed on the second substrate for performing the same. (Ikeda at col. 4, ll. 8-34; col. 9, ll. 7-17; col. 10, ll. 55-60.)

Response to Arguments

9. Applicant's arguments filed March 30, 2007, have been fully considered but they are not persuasive. Applicant argues that the electrode of claim 1 is controlled with the same electric potential, contrary to the teachings of Johnson. (Amendment at p. 11.) Examiner respectfully disagrees. Applicant notes that both the column electrode (6) and the third electrode (6') include their own drive means and are independently and separately controlled. Examiner agrees with the above statement, but notes that Johnson also discloses wherein the column electrode (6) and the third electrode (6') may be controlled with the same electric potential. (Johnson at ¶ 0032.) As to

applicant's contention that none of the references disclose an electrode provided with bumps that are formed continuously in a string like fashion, the examiner respectfully submits that these arguments have been addressed in the rejections of the claims above.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander S. Beck whose telephone number is (571) 272-7765. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander S. Beck
June 16, 2007



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